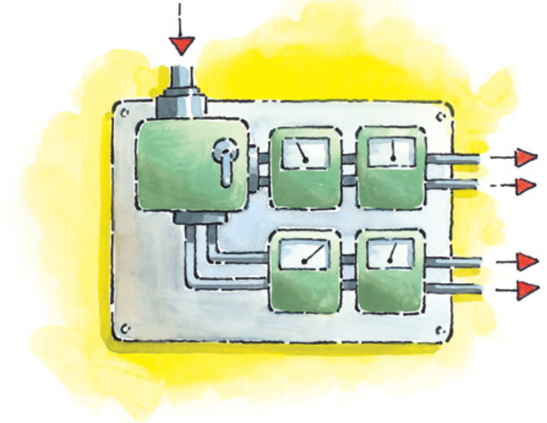
Triad (or Transmission Use Of Systems, TUOS) charges are premium charges that are levied on your total consumption during the three peak demand periods during the year. These premium charges are built into the tariff, and savings are given as a rebate. Electricity supply companies warn large users shortly before these are expected and many businesses plan to shut off their large equipment to avoid the penalty. Triads generally occur in the winter months between about 4:30pm and 7:30pm.

5 Consider sub-metering for detailed consumption information

- **Dividing a larger business into sections can be an important step in understanding where all the energy is being consumed.** For example, you may wish to know what electricity the processing plant, the offices or the factory are using. This information can be vital in making the best decisions about energy-saving investment. To achieve this, it is necessary to sub-meter the different sections.



The sum of all the sub-meter readings should equal the total consumption on your electricity bill.

Sub-meters can be used to confirm the actual consumption for each of the different sections that are monitored. This may differ from what was anticipated, planned or allocated. They can help to highlight sections or specific items or equipment that consume most of the electricity, and help to determine what their demand patterns are. The effect of energy saving improvements can also be monitored.

As a minimum, every different plant on a site should be separately metered.

For gas oil, it is important to monitor the proportion used by the burners and boilers separately from the mobile plant.

QUESTION: What next?

ANSWER: If, after reading through the Understanding Energy Bills bulletin, you have any further questions or would like to report any areas of potential energy inefficiency on your site, please contact the Energy Champions (David Gazzard / Mark Hamilton) via telephone, email or fax. You will then be contacted with relevant help and assistance to improve energy efficiency at your site.

Save Energy

3. Understanding Energy Bills

Midland Quarry Products

If you do not see (or understand) your energy bills, you may not be able to spot possible errors, or see whether the amount of energy used at your site (or home) is increasing or decreasing. In addition you will not be able to see the effect of energy saving measures that you have put in place.

Did you know ?

- After many years of low-cost energy, tariffs have recently increased dramatically (30-40% over the year leading up to October 2005).
- Peak demand occurs between about 4:30 and 6:30 pm. The rate difference between peak and off-peak rates is two to three times the cost.
- All of the UK's electricity and gas supplies are purchased annually through a single point.
- Procurement of gas oil and diesel is centrally co-ordinated.
- The energy MQP uses is subject to an energy tax from the government called the Climate Change Levy.
- By lowering your electrical demand during winter peak times you improve your overall rate charged by the supplier.

Please help us to SavE by:

- ✔ Checking if you are unsure about anything on your energy bill – ask your utility supplier for help!
- ✔ If your site consumes more than 100kW of power the bill should include a graph showing how the energy was consumed during the period.

If you are responsible for energy tariffs at your site then read below:

TOOLBOX

How to reduce energy consumption with energy tariffs:

1 Understand your energy bill
2 Determine when and how much energy is used at your site and how it relates to your production
3 Correct the power factor to at least 0.9
4 Evaluation of site 'Maximum Demand', Available Supply Capacity and Triad (or TUOS) charges
5 Consider sub-metering for detailed consumption information.

1 Understand your energy bill

- **Ask for copies of your site energy bills to make sure you understand the charges.** There are many names for different components of the fixed and variable charges. There are huge potential benefits from sitting down with the energy supplier and understanding all aspects of the bill.

  MQP is required to pay a Climate Change Levy, which is incorporated into the energy bill. This amounts to:

  - 0.43p/kWh for Electricity
  - 0.15p/kWh for Natural Gas
  - Approximately 0.15p/kWh for Coal/Lignite
  - Approximately 0.07p/kWh for LPG.

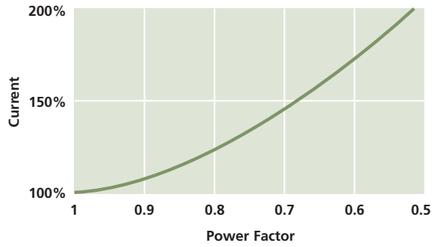
2 Determine when and how much energy is used at your site and how it relates to your production

- **Determine where, when and how the energy is used at your site.** For larger consumers, i.e. businesses with a load over 100 kW, detailed data is available. Half hourly electricity demand data can be provided through your Energy Champion. This half-hourly data feeds into load profile graphs from which some important discoveries and decisions can be made. Many businesses, for example, are shocked to find that their base load, e.g. the energy being consumed at say, 2am on Sunday morning, is as much as 30% of their maximum demand. Other issues such as why the energy consumption peaks or drops at certain times, can lead to changes to existing practice and/or technologies, and therefore considerable energy savings.

3 Correct the power factor to at least 0.9

- **Measure the power factor at your site.** The power factor, which ranges between 0 and 1, is a measure of how effectively the electrical power is used. The ideal power factor is 1. Anything less than 1 means that extra power is required to achieve the task. Power factor correction is the term used to describe the action of getting the power factor as close to 1 as viable. This is usually done by the addition of capacitors to the electrical network.

  The graph below illustrates how much additional power is required to compensate for reducing power factors.



As the power factor drops the system becomes less efficient. A drop from 1.0 to 0.9 results in 15% more current being required for the same load. A power factor of 0.7 requires approximately 43% more current to handle the same load.

By installing capacitors to improve the power factor on your site, you could:

a) Reduce heating losses in transformers and distribution equipment
b) Prolong plant life
c) Stabilise voltage levels
d) Increase the capacity of your existing system and equipment
e) Reduce energy consumption.

Many larger companies will be paying a charge based on the power factor of their electrical installation. Although some electricity suppliers actively encourage power factor equipment to be installed, many do not. Think about conducting a financial exercise to determine the length of payback when correcting power factors.

Electricity distribution companies may levy an additional (reactive) charge where power factors are below 0.9.

4 Evaluation of site 'Maximum Demand', Available Supply Capacity and Triad (or TUOS) charges

- This is key to cost effective energy management. **Maximum Demand** may be measured in kilowatts (kW) – power usefully used – or in kilovolt-amperes (kVA) – the apparent power delivered. Maximum demand is the highest instantaneous demand recorded at the site.

  Action to avoid excessive maximum demand charges, production procedures and schedules should be examined to ensure, wherever possible, a smooth and reasonably constant maximum demand profile. Maximum demand controllers can be used to shed load automatically when predetermined consumption rates are reached.

  Available Supply Capacity is the maximum guaranteed capacity agreed with the local distribution company. The Available Supply Capacity level should be set as near as possible to the maximum demand for the site. For every kilowatt (kW) of available supply capacity you pay approximately £1 per month. Therefore every kW of capacity above the maximum demand is £1 wasted. This effect is illustrated below. If you wish to review your Available Supply Capacity level for your site, please discuss this with your Energy Champion.